

Interferences minimization using solid phase extraction in a multiparametric sequential injection system

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Micronutrients are essential for the normal functioning of living organisms, consequently, supplements containing these micronutrients are often used in agriculture, resulting in their leaching into ground water. In this scenario, a multiparametric sequential injection system with a spectrophotometric detection for the determination of copper, zinc, and iron was developed (Fig. 1). To conduct all determinations using a single manifold, a non-selective reagent, such as 4-(2-pyridylazo) resorcinol (PAR), was chosen as the colour reagent for the determination of copper and zinc. As PAR is a non-specific reagent, solid phase extraction using two different sorbent materials was used to allow the determination of the individual metal ions. The materials used to separate the copper and zinc ions were Chelex 100 and a PVC-based polymer inclusion membrane (PIM) containing di-(2-ethylhexyl)phosphoric acid (D2EHPA), respectively. As a strategy for the iron determination, 3-hydroxy-4-pyridinone (MRB13) was considered as a highly selective iron chelator.

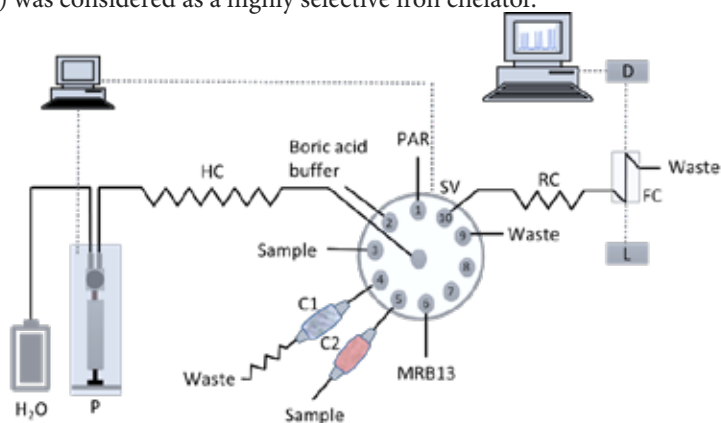


Fig.1. Sequential injection manifold for micronutrients determination. C1 – PIM column; C2 – Chelex 100 column; P – Syringe pump; HC – holding coil; SV – selection valve; RC – reaction coil; L – light source; FC – flow cell; D – Spectrophotometer;

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